

Prevalence of Comorbidities in the Urological Patients at the Former Military Teaching Hospital of Cotonou

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Abstract

Background: Comorbidities are additive diseases and care burdens in urological patients. Determining the epidemiologic profile of comorbidities in urological patients in our setting may help us to better the management of urological disease. **Objective:** To evaluate the prevalence of comorbidities in urological patients. **Patient and Method:** We collected comorbidity, urological disease and demographic data in all urological patients managed at the former Military Teaching Hospital of Cotonou from January 1, 2012, to December 31, 2020. We used the software R 4.2.2 to perform descriptive and bi-varied data analysis. Student's t test was used to compare means. **Results:** The prevalence of comorbidities was 14.2%, *i.e.*, 601 comorbidity-affected among 4242 patients. The comorbidities predominantly affected men: the sex ratio was 13:1. The presence of comorbidity was correlated with patients' age ($p < 0.001$). The comorbidities observed in the 601 affected patients were hypertension (84.5%), diabetes (26.5%), asthma (2%), and heart failure (1.2%). Hypertension ($p = 0.001$) and asthma ($p = 0.030$) were correlated with age. No comorbidity was associated with gender. The comorbidities' prevalence was highest in patients aged 40 - 80 years who presented urological diseases such as BPH (68.9%), Erectile dysfunction (ED) and ejaculatory disorders, overactive bladder (OAB) and neurogenic lower urinary tract dysfunction (LUTD), renal cyst (5%), inguinal hernia (4.2%), urinary stones (2.8%), and prostate cancer (2.3%). **Conclusion:** The comorbidities' prevalence was 14.2% in the urological patients. The main comorbidities were hypertension (84.5%) and diabetes mellitus (26.5%).

Keywords

Comorbidity, Urological Patients, Prevalence

1. Introduction

In urology, comorbidities are diseases coexisting with urological diseases in the same patient. Comorbidities may not interact with the urological disease, but it can negatively impact urological therapy especially urological surgery [1] [2]. The index of Charlson enables the surgeon to mitigate such negative surgical impact [3]. We have previously depicted the prevalence of potentially surgical diseases among our patients [4]: benign prostate hyperplasia (52.03%), prostate cancer (6.49%), urinary stone (3.87%), bladder cancer (0.95%), etc. It is evident that comorbidities may increase the treatment cost, prolong the duration of therapy and hospitalization, or influence therapeutic choices. Although we often cope with situations such as infectious complications in diabetic urological patients for example, very few studies have evaluated the types and the prevalence of comorbidities in our country. In the West African region, few but no studies have dealt with comorbidities in urological patients. A Nigerian study has depicted comorbidities in prostate cancer patients [5]. We need the epidemiology of comorbidities associated with a broader spectrum of urological diseases. Knowing the epidemiologic profile of comorbidities in urological patients in our setting may also help us to better the management of urological disease.

2. Objective

We aim to evaluate the prevalence of comorbidities in urological patients at the former Military Teaching Hospital of Cotonou.

3. Patients and Method

We performed an exhaustive collection of data on diseases managed at the urological department of the former Military Teaching Hospital of Cotonou from January 1, 2012, to December 31, 2020. We recorded in each patient, the age, the gender, the urological disease, and every comorbidity that he presented along with his urological disease. We used the software R 4.2.2 to perform a descriptive analysis of collected data and a bi-varied analysis of the relationship between comorbidities and patients' demographic characteristics. We used Student's t test to compare means. The significance threshold was 5% with the confidence interval being 95%.

4. Results

Among 4242 patients, 601, *i.e.*, 14.2% had one or more comorbidities along with their urological diseases. In the overall population ($n = 4242$), the presence of comorbidity was significantly associated with the patients' age ($p < 0.001$) and gender ($p < 0.001$).

The comorbidities' frequency increased from 0.6% in patients below 40 years up to 21.9% and 20.4% respectively in patients aged 40 - 80 years and 80 - 102 years (Table 1). The risk of comorbidity in the patients aged 40 - 80 years and 80 - 102 years was respectively 47.6-fold and 43.3-fold the risk of comorbidity in the patients aged 27 - 40 years.

Table 1. Demographic characteristics of comorbidity-affected patients.

Demographics	Patients	Comorbidity-affected patients		p	RC	CI95% RC
	Number	Frequency (n)	Percentage (%)			
Age				<0.001		
0 - 40	1534	9	0.6		1	
40 - 80	2595	569	21.9		47.6	24.6 - 92.2
80 - 102	113	23	20.4		43.3	19.5 - 96.3
Sex				<0.001		
Female	528	43	8.1		1	
Male	3714	558	15.0		2.0	1.4 - 2.8

The comorbidities were more frequent in the male patients (15.0%) than in the female patients (8.1%). The comorbidity's risk was twofold higher in the male patients than in the female patients (**Table 1**).

The urological diseases in the comorbidity-affected patients were mainly (**Table 2**) BPH (68.9%), Erectile dysfunction (ED) and ejaculatory disorders, overactive bladder (OAB) and neurogenic lower urinary tract dysfunction (LUTD, 6.7%), renal cyst (5%), inguinal hernia (4.2%), urinary stones (2.8%), and prostate cancer (2.3%).

The comorbidities observed in the 601 affected patients were chiefly hypertension, diabetes mellitus, asthma, and heart failure (**Figure 1**). The prevalence of hypertension was 84.5%: hypertension was alone in 70.7% of patients and combined with diabetes mellitus in 13.0% of patients, asthma in 0.3% of patients, heart failure in 0.2% of patients, and diabetes mellitus and asthma in 2 (0.3%) patients. The prevalence of diabetes, asthma and heart failure was respectively 26.5%, 2%, and 1.2%.

The comorbidity-affected patients were aged 27 through 102 years, their mean age was 62.3 years (**Table 3, Figure 2 and Figure 3**). They were 92.9% male (n = 558) and 7.1% female (n = 43), *i.e.*, the sex ratio was 13:1. The males' mean age was 62.6 years, the females' mean age was 57.8 years, but the difference was not significant (p = 0.05).

Inside the comorbidity-affected population, none of the comorbidities and none of the combination of comorbidities was correlated with patients' gender (**Table 4**). Each comorbidity and each combination of comorbidities affected more males than females, but the differences were not significant. Similarly, each comorbidity or combination of comorbidities affected more patients aged 60-80 years than patients aged 40-60 years. Nevertheless, only hypertension (p = 0.001) and asthma (p = 0.030) were significantly associated with patients' age. Diabetes (p = 0.508), heart failure (p = 0.073), the combinations hypertension-diabetes (p = 0.431), hypertension-asthma (p = 0.324), hypertension-heart failure (p = 1.000), and hypertension-diabetes-asthma (p = 0.571), were not correlated with patients' age.

Table 2. Urological diseases in the 601 comorbidity-affected among 4242 patients.

Urological diseases	Number (n) of affected patients	Proportion (%) of affected patients
<i>BPH</i>	414	68.9
ED and Ejaculatory disorders	114	19
OAB and neurogenic LUTD	40	6.7
<i>Renal cyst</i>	30	5
<i>Inguinal hernia</i>	25	4.2
<i>Urinary stones</i>	17	2.8
<i>Prostate cancer</i>	14	2.3
Acute urinary infections	13	2.2
Other	65	10.8

Table 3. Demographic characteristic of comorbidity-affected patients.

	Patients		Patients' age		Sex-Ratio	p-value
	n (%)	Range	Mean	Standard Deviation		
Female	43 (7.2)	34 - 79	57.8	11.1	13:1	0.05
Male	558 (92.9)	27 - 102	62.6	10.3		
Overall	601 (100)	27 - 102	62.3	10.5		

Table 4. Correlation between comorbidities' presence and patients' demography.

Comorbidities	Comorbidity-affected patients (n = 601): correlation with age					p-value
	n (%) per age range in years					
	20 - 40	40 - 60	60 - 80	80 - 102		
Hypertension	4 (44.4)	183 (81.7)	304 (88.1)	17 (73.9)	0.001	
Diabetes	3 (33.3)	63 (28.1)	85 (24.6)	8 (34.8)	0.508	
Asthma	2 (22.2)	3 (1.3)	7 (2.0)	0 (0.0)	0.030	
Heart failure	0 (0.0)	0 (0.0)	6 (1.7)	1 (4.3)	0.073	
HT + Diabetes	0 (0.0)	25 (11.2)	52 (15.1)	3 (13.0)	0.431	
HT + Asthma	0 (0.0)	0 (0.0)	4 (1.2)	0 (0.0)	0.324	
HT + Heart failure	0 (0.0)	0 (0.0)	1 (0.3)	0 (0.0)	1.000	
HT + Diabetes + Asthma	0 (0.0)	0 (0.0)	2 (0.6)	0 (0.0)	0.571	
Comorbidities	Comorbidity-affected patients (n = 601): correlation with gender					p-value
	n	Frequency (%)	n (%) Female	n (%) Male		
Hypertension	508	84.5	34 (79.1)	474 (84.9)	0.305	
Diabetes	159	26.5	13 (30.2)	146 (26.2)	0.560	
Asthma	12	2.0	2 (4.7)	10 (1.8)	0.209	
Heart failure	7	1.2	1 (2.3)	6 (1.1)	0.407	
HT + Diabetes	78	13.0	7 (16.3)	73 (13.1)	0.552	
HT + Asthma	2	0.3	0 (0.0)	4 (0.7)	1.000	
HT + Heart failure	1	0.2	0 (0.0)	1 (0.2)	1.000	
HT + Diabetes + Asthma	2	0.3	0 (0.0)	2 (0.4)	1.000	

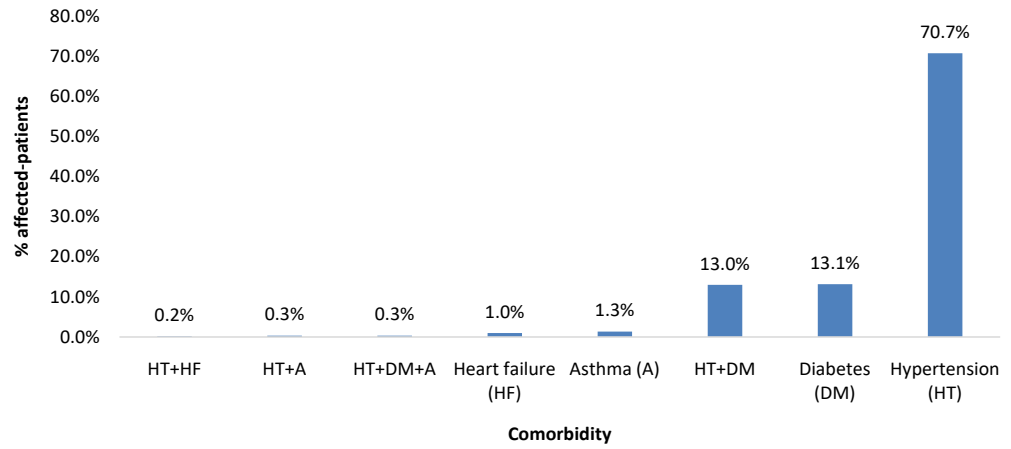


Figure 1. Comorbidity's spectrum.

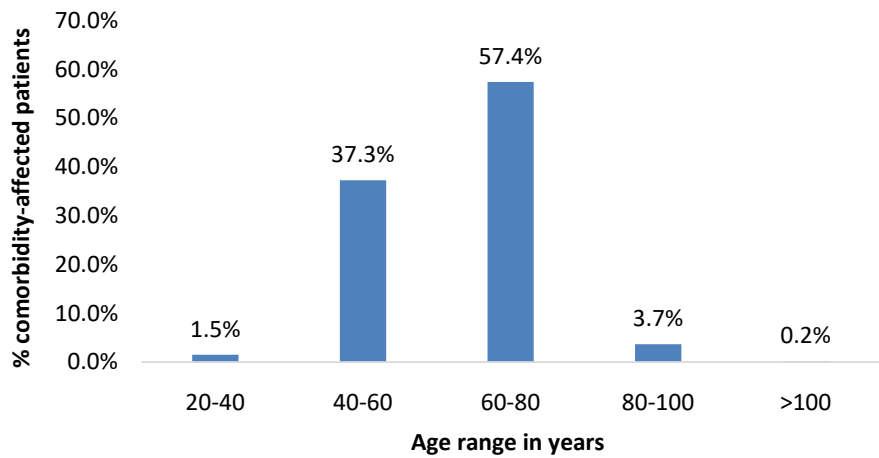


Figure 2. Comorbidities and patients' age.

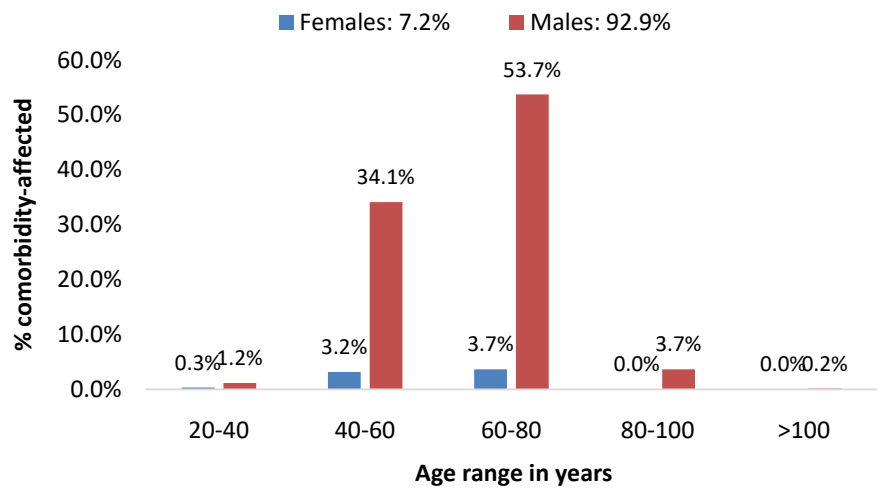


Figure 3. Comorbidities and patients' gender.

5. Discussion

The overall prevalence of comorbidities was 14.2%. Nevertheless, comorbidities'

burden varied according to age and gender. The prevalence of comorbidity was low in patients less than 40 years old. Females were less likely to have comorbidities than the males. Thus, patients below 40 years are less likely to have a comorbidity along with their urological disease. It means less care burden for both the clinician and the patient. For example, presurgical anesthetic evaluation can be swift and simple or possibly omitted in patients below 40 years, which will mean a non-delayed surgery and a reduced treatment cost [6]. The prevalence of comorbidity dropped in patients more than 80 years old while it was highest in patients aged 40-80 years. Certainly, numerous comorbidity-affected patients died before they reached 80 years of age. Urologists should correctly manage comorbidities to lengthen life expectancy in comorbidity-affected patients.

The predominant comorbidities in our patients were hypertension and diabetes. A Nigerian study on prostate cancer patients in which the prevalence of comorbidities was 48.1% (*i.e.*, 3.4 times the 14.2% prevalence in our patients) also found hypertension (39.5%), and hypertension and diabetes (8.6%) as the main comorbidities [5]. Similarly, Garg found among other chronic conditions, 64.6% hypertension and 26.8% diabetes in patients with benign urological diseases, 77.6% hypertension and 29.8% diabetes in patients with urological cancers, the mean age being 58.7 ± 17.6 years in all the patients, 56.9 ± 17.5 in the patients with benign urological diseases, and 71.0 ± 12.1 in the patients with urological cancers [7].

The comorbidities were observed in patients with potentially surgical diseases such as BPH, renal cysts, inguinal hernia, urinary stones, and prostate cancer. According to some authors, comorbidities increase the mortality rate in major urological surgeries such as radical prostatectomy for prostate cancer [1] [8] and radical cystectomy for urothelial cancer [9]. Other authors have insisted on comorbidities' linkage with non-specific cancer death in prostate cancer patients [9] [10]. Frendl, *et al.* have integrated comorbidities into the prediction tool that they have designed to predict death from other causes in localized prostate cancer patients [11]. Comorbidities can promote post-surgery complications, stressing that treating comorbidities is crucial for the prevention of post-surgical complications [12]. Comorbidities also influence non-surgical urological therapy. They increase the toxicity of anti-angiogenic drugs [13] in the treatment of metastatic renal cancer. They also induce a difference in prognosis between two patients managed for the same pathology [3]. Clearly, comorbidities are both life expectancy limiting and post-therapeutic complications promoting factors. Any urological care should encompass comorbidities to achieve full efficacy and maximum benefit for the patient.

6. Conclusion

The comorbidities' prevalence was 14.2% in the urological patients. The main comorbidities were hypertension (84.5%) and diabetes mellitus (26.5%). They predominantly affected the males (sex ratio 13:1) aged 40 - 80 years and pre-

senting mainly BPH or prostate cancer (71.2%).

Limitations to This Study

This a retrospective study carried out in a single hospital. It may not reflect the actual prevalence of comorbidities in urological patients at the national level.

Conflicts of Interest

We have no conflict of interest.

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